

Commercial Sales Approach Used in BOE Response

Introduction

The purpose of this procedure is to describe the development of a sales approach that will be used to defend commercial values appealed to the Board of Equalization. In general, three years of sales within the County are queried using Access. The sales extract table is imported into SPSS where a monthly sales trend is calculated by property type. This trend is applied to the individual sale prices to bring them up to the January 1st assessment date. These trended sales are used for the purpose of developing neighborhood adjustments for the statistical update as well as developing sales models for our BOE response.

The SPSS file that includes the trended sale prices is then exported to an Excel file in a separate folder for use in the development of commercial sale models. The procedure to develop and incorporate these models in our appeal response is described below.

Query and Clean Sales

- The Access database used to query sales is called “Com_Sales.mdb”. It is used to create the table of commercial sales that is imported into SPSS and then into Excel for analysis.
- The query screen is shown below and serves the dual purpose of providing the sales used in the statistical update as well as those used to develop sales models.

The screenshot shows the Microsoft Access interface. The main window displays the 'COM_Sales : Database (Access 2000 file format)' with a list of tables and queries. A 'Startup : Form' window is open, titled 'Commercial Sales Startup', with three steps: 'Step 1: Edit Sales Query', 'Step 2: Year for Current Values' (set to 2008), and 'Step 3: Run Sales Table'. Below this, the '_Base : Select Query' window shows a query design grid with five tables: 'parcel_subset', 'parcel', 'valuation', 'property', and 'address'. The 'valuation' table is selected, and its fields are linked to the other tables. Below the grid is a table with the following data:

Field:	sale_date	sale_vrfy	region	prop_type	prop_subtype	total_acres	link_id	tot:
Table:	parcel_subset	parcel_subset	parcel_subset	parcel_subset	parcel_subset	parcel	parcel_subset	par
Total:	Group By	Gro						
Sort:								
Show:	<input checked="" type="checkbox"/>							
Criteria:	Between #01/01/2004# And		"AA" Or "CC" Or "SI"					
or:								

- When the query is opened, a window pops up that prompts the user to enter the criteria to pull sales for analysis. For modeling and statistical updating this will usually involve pulling three years of sales immediately preceding the assessment date. However, this same query is used for pulling smaller data sets that can be used in applying the sales approach presented to the BOE.
- A tax year is also entered to pull the appropriate Ascend values for either the market modeling or BOE applications.
- The “make” table (SALES) that is created in Access is imported into SPSS and saved under a file name that denotes the assessment year for which the sales were extracted (ie. “2008Update.sav”).
- A syntax file that has been written to clean sales, create new variables, determine sales trends, and calculate trended sale prices is included in the Appendix.
- After the sales have been trended, the data is exported to a separate folder as an Excel file where the sales models are then developed. For the purpose of developing the sales models, separate Excel files are created for each property type.

Model Development

- The property types for which models will be developed include APT, MUL, 4PLX, OFF, RTL, RST, SRV, and WHS/IND.
- New variables are created that will become the dependent and independent variables used in the regression analysis. For example, the land and detached structure values are subtracted from the trended sale prices. This creates a dependent variable called AdjTrndSP that effectively constrains the coefficients for the land and detached structure values to 1.
- Independent variables such as GrdSF are calculated by multiplying a linearized grade factor times the building square footage. This allows adjustments for quality grade to be made on a per square foot basis, which is more realistic than making lump sum adjustments to the time adjusted sales prices.
- Dependent variables for covered parking area or spaces were considered for the APT, MUL, and 4PLX models that also required a corresponding decrease in the detached structure values.

Model Output

- A summary of each model begins on the next page. The regression output includes the Adjusted R Square, coefficients for each variable in the model, and the monthly time trend used to time adjust the sales prices.

Apartment Model

<i>Regression Statistics</i>	
Multiple R	0.962195266
R Square	0.92581973
Adjusted R Square	0.919885308
Standard Error	270731.8685
Observations	28

ANOVA	
	<i>df</i>
Regression	2
Residual	25
Total	27

<i>Coefficients</i>	
Intercept	\$254,290
GrdSF	\$130.15
AgeSF	-\$2.70

Time Trend: .009 (0.9%) per month

Multi-Family Model

<i>Regression Statistics</i>	
Multiple R	0.83781659
R Square	0.701936638
Adjusted R Square	0.697097947
Standard Error	40423.55266
Observations	314

ANOVA	
	<i>df</i>
Regression	5
Residual	308
Total	313

<i>Coefficients</i>	
Intercept	\$62,036
CprtSF	\$31.03
GarSF	\$31.83
CondSF	\$48.94
GrdSF	\$31.51
AgeSF	-\$0.72

Time trend: .005 (0.5%) per month

Office Model

<i>Regression Statistics</i>	
Multiple R	0.968383961
R Square	0.937767495
Adjusted R Square	0.93582273
Standard Error	189866.2972
Observations	100

ANOVA	
	<i>df</i>
Regression	3
Residual	96
Total	99

<i>Coefficients</i>	
Intercept	\$157,093
GrdSF	\$106.94
AgeSF	-\$0.62
MedOffSF	\$9.19

Time trend: .012 (1.2%) per month

Fourplex Model

<i>Regression Statistics</i>	
Multiple R	0.8736687
R Square	0.76329699
Adjusted R Square	0.74751679
Standard Error	53069.7713
Observations	49

ANOVA	
	<i>df</i>
Regression	3
Residual	45
Total	48

<i>Coefficients</i>	
Intercept	\$88,510
CvrdPkg	\$3,341
GrdSF	\$105.06
AgeSF	-\$1.29

Time trend: .005 (0.5%) per month

Retail Model

<i>Regression Statistics</i>	
Multiple R	0.924309967
R Square	0.854348915
Adjusted R Square	0.849147091
Standard Error	1699062.814
Observations	88

ANOVA

	<i>df</i>
Regression	3
Residual	84
Total	87

<i>Coefficients</i>	
Intercept	\$14,581
GrdSF	\$178.71
ConvGasSF	\$21.02
AgeSF	-\$2.63

Time trend: .008 (0.8%) per month

Service Model

<i>Regression Statistics</i>	
Multiple R	0.950272432
R Square	0.903017695
Adjusted R Square	0.890086721
Standard Error	134788.8743
Observations	18

ANOVA

	<i>df</i>
Regression	2
Residual	15
Total	17

<i>Coefficients</i>	
Intercept	\$164,841
GrdSF	\$53.89
AgeSF	-\$0.34

Time trend: .013 (1.3%) per month

Industrial/Warehouse Model

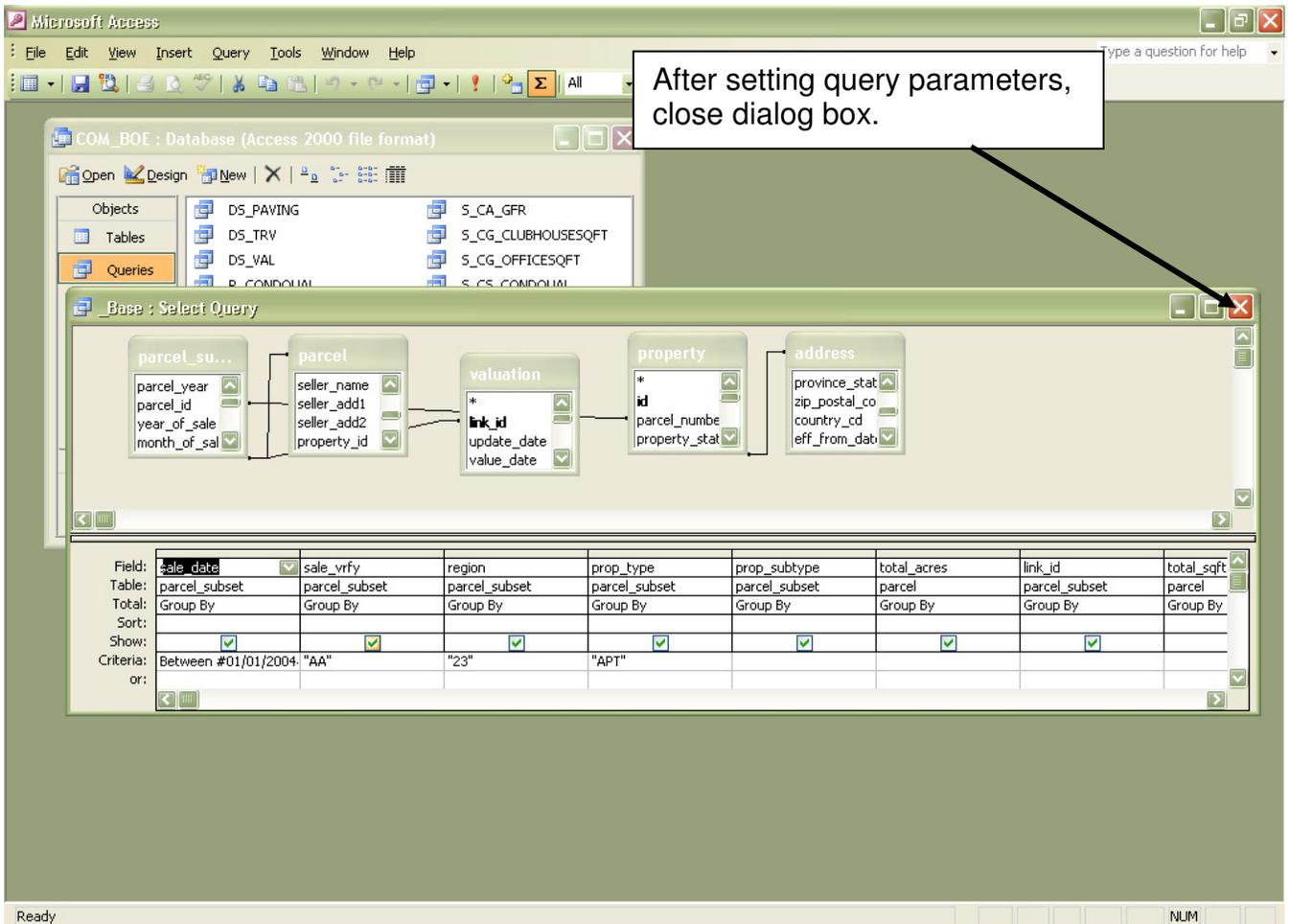
<i>Regression Statistics</i>	
Multiple R	0.971803952
R Square	0.944402921
Adjusted R Square	0.940928103
Standard Error	175747.1563
Observations	35

ANOVA

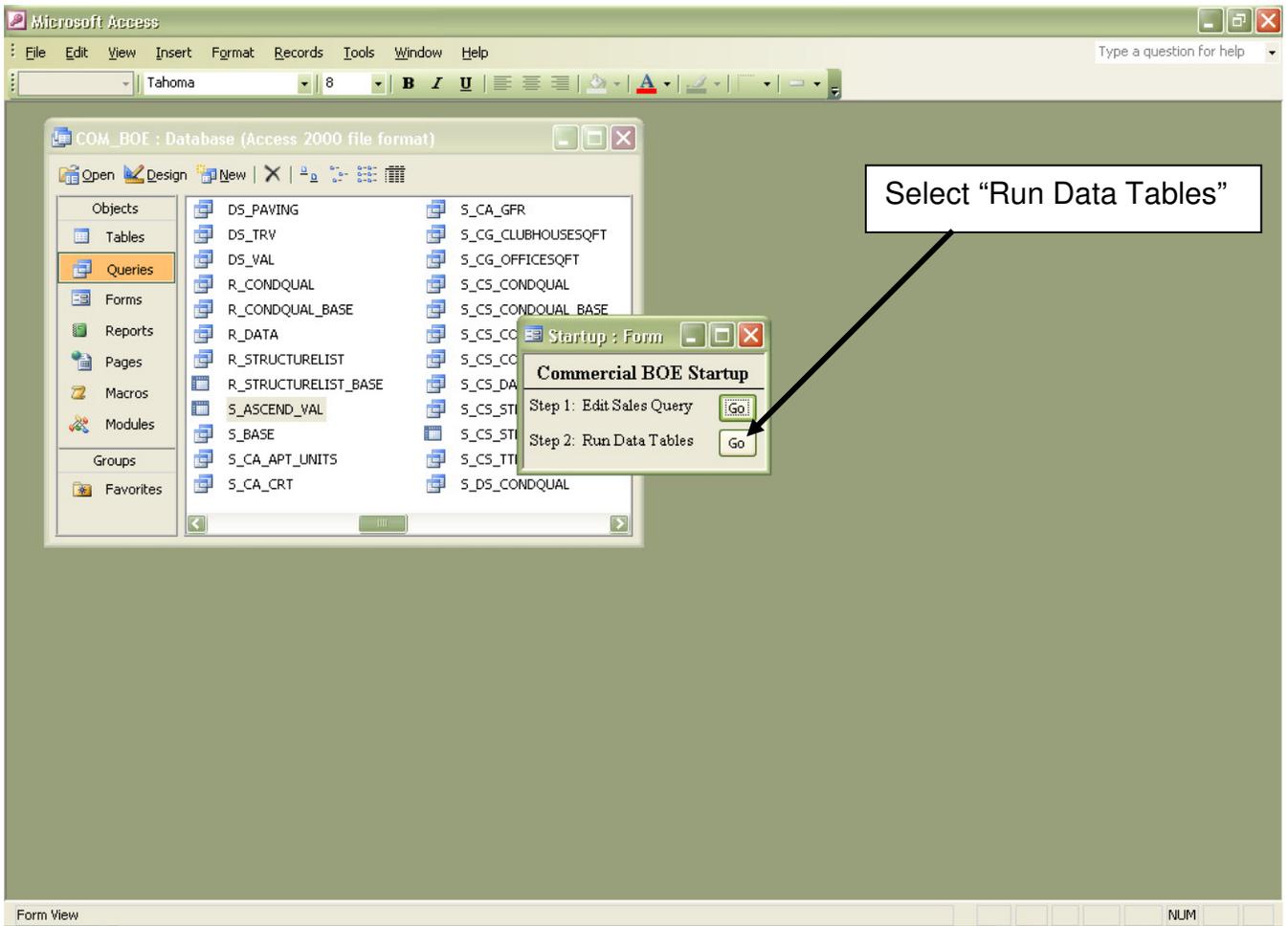
	<i>df</i>
Regression	2
Residual	32
Total	34

<i>Coefficients</i>	
Intercept	\$192,585
GrdSF	\$82.00
AgeSF	-\$1.98

Time trend: .015 (1.5%) per month



7. Set ACCESS query parameters for comparable sales search and close query screen.



8. Select "Run Data Tables".

Microsoft Access - [COM_BOE : Form]

File Edit View Insert Format Records Tools Window Help

Type a question for help

M5 Sans Serif 8

Subject Property Sales **Comp Sales**

Subject Parcel

Property Owner **HOLLAND HOLDINGS IV CAPITAL CITY**

Parcel Number 38750100100 Situs Address 5800 TITLEIST LN SE LACEY

Ratio Data

AV/SqFt 101.36

AV/Unit 103,280

Property Data

Prop Type APT Total Acres 8.83 Zoning MD

Region 23 Total SqFt 0

Structure Data

Structure Type	Total SqFt	# Units	Year Built	Construction	Quality	Condition	Total RCNLD
Com APARTMENTS/CLUB-HOUSE	97,815	96	1994 - 1994	D	A	AV	5549424
Res							
Attached Carport							
Detached Carport	17,280						284,136
Attached Garage							
Detached Garage							
Paving	108						
Mobile Home Spaces							
RV Trailer Park Spaces							
Golf Course							
Other Detached Structure Value	665						20,270

Notes

Recommended

Ln'd Value \$1,420,650

Bldg Value \$8,494,200

Adjustments

Assessment Date 01/01/2007

Time .009

Qual x SF 117.89

Eff Age x SF -2.25

Cond x SF 0

Garage 0

Carport 0

CvrdPkg 0

BOE Response Cover

Market Approach

Cost Approach

Refresh Comps

Fill in recommended values, then fill in requested information under "Adjustments".

Then, select the "Sales" tab.

Form View NUM

9. On the right hand side of the screen, enter the requested data. If there is no value for a given field, enter "0".
10. Select the "Sales" tab.

Microsoft Access

COM_BOE : Form

Subject Property Sales **Comp Sales**

Sale Parcel

Buyer MARELICK LIVING TRUST, LIN Seller MATTOX MICHAEL L & CLARITA Y

Parcel Number 11821281400 Situs Address 1315 VIOLET ST SE LACEY

Property Data

Prop Type APT Acres Sold 0.23 Zoning MD

Region 23 Total SqFt 10050

Sale Data

SP/SqFt 102.30

SP/Unit 63,980

Sale Date 12/21/2004

Sale Price \$319,900

Excise 332747

Recommended

Ln'd Value \$1,420,650

Bldg Value \$8,494,200

Adjustments

Assessment Date 01/01/2007

Time .009

Qual x SF 117.89

Eff Age x SF -2.25

Cond x SF 0

Garage 0

Carport 0

CvrdPkg 0

BOE Response Cover

Market Approach

Cost Approach

Refresh Comps

Record: 1 of 4

NUM

Tab through the available comparable sales.

Include a sale in the BOE answer by clicking "Make Comp".*

Once comparables have been selected, click on the "Comp Sales" tab to add notes to each sale.

11. Tab through the available sales, selecting a sale by clicking on "Make Comp". If there are not enough sales, you can rerun the query at any time by going back to Step 6.

*Note: If you want to unselect a sale, go to the "Comp Sales" tab and click on "Remove Comp". Then, in the lower right corner, click "Refresh Comps".

Microsoft Access - [COM_BOE : Form]

File Edit View Insert Format Records Tools Window Help

Tahoma 8 B I U

Subject Property Sales Comp Sales

Sale Parcel

Buyer LAKEWOOD INVESTORS LLC Seller MAD SARY & LEEANNA

Parcel Number 11821320100 Situs Address 1617 SE JUDD ST LACEY

Property Data

Prop Type APT Acres Sold 2.15 Zoning MD **MAKE COMP!** COMP2

Region 23 Total SqFt 93654

Sale Data

SP/SqFt 52.03

SP/Unit 39,900

Sale Date 07/30/2004

Sale Price \$1,596,000

Excise 327507

Recommended

Ln'd Value \$1,420,650

Bldg Value \$8,494,200

Adjustments

Assessment Date 01/01/2007

Time .009

Qual x SF 117.89

Eff Age x SF -2.25

Cond x SF 0

Garage 0

Carport 0

CvrdPkg 0

BOE Response Cover

Market Approach

Cost Approach

Refresh Comps

Structure Data

Structure Type	Total SqFt	# Units	Year Built	Construction	Quality	Condition	Total RCNLD
Com APARTMENTS/STORAGE-WHSE	30,672	40	1974 - 1974	D	A	AV	1163881
Res							
Attached Carport							
Detached Carport							
Attached Garage							
Detached Garage							
Paving	46,472						92,415
Mobile Home Spaces							
RV Trailer Park Spaces							
Golf Course							
Other Detached Structure Value		1					16,061

Record: 2 of 4

Form View NUM

To preview market approach, select "Market Approach".

12. To preview the market approach reports, click on "Market Approach".

Market Approach : Report

Office of Thurston County Assessor - 2000 Lakemidge Drive SW, Olympia, Washington 98502 - (360) 786-6410

Validated Commercial Property Sales for Property Type: APT 07/31/2008

SUBJECT

Parcel ID	Site Address	Total SqFt	Total Acres	Region	Zone
38750100100	5800 TITLEST LN SE LACEY	0	8.83	23	MD

Owner: HOLLAND HOLDINGS IV CAPITAL CITY

Structure Info:

Structure Type	Total Square Feet	# Units	Year built	Construction Quality	Condition
APARTMENTS CLUB-HO USE	97,815	96	1994 - 1994	D	A
DETACHED CARPORT	17,280				
DETACHED GARAGE	4,914				
PAVING	108,135				
OTHER DETACHED STRUCTURE VALUE	665				

COMPARABLE SALES

Parcel ID	Site Address	Estimate ID	Multiple Parcel Sale	Acres Sold	Region	Zone
11823140300	1546 SE MARVIN RD OLYMPIA	330442	N	9.55	23	VC

Buyer: ECHO UNION MILLS LLC Seller: VILLAGE AT UNION MILLS LLC

Structure Info:

Structure Type	Total Square Feet	# Units	Year built	Construction Quality	Condition
APARTMENTS CLUB-HO USE	152,146	182	2001 - 2001	D	A
DETACHED CARPORT	22,686				
DETACHED GARAGE	6,300				
PAVING	99,999				
OTHER DETACHED STRUCTURE VALUE	2,315				

Sample comparable sales report.

Page: 1

Market Approach : Report

Office of Thurston County Assessor - 2000 Lakemidge Drive SW, Olympia, Washington 98502 - (360) 786-6410

Comparable Sales Adjustments

Subject	Comp #1	Comp #2	Comp #3	Comp #4	Comp #5
Subject Property: 38750100100 5800 TITLEST LN SE LACEY	11823140300 1546 SE MARVIN RD OLYMPIA	11821320100 1617 SE JUDD ST LACEY			
COUNTY					
Assessment Date	01/01/2007				
Assessed Value	\$9,314,850				
Value / SF	\$101.36				
Value / Unit	\$103,280				
Comparable Sales					
Sale Date	10/11/2004	07/30/2004			
Sale Price	\$14,280,000	\$1,596,000			
Time Adj	-\$3,334,500	-\$416,596			
Trended SP	\$17,584,500	\$2,012,596			
Grade ± SF	(\$6,405,082)	\$7,915,488			
Eff Age ± SF	(\$807,118)	(\$1,066,777)			
Land Value	(\$77,450)	\$396,400			
Det Structure	(\$148,748)	\$487,977			
Adj. SP	\$10,146,503	\$10,245,645			
Adj. SP/SF	\$66.69	\$334.04			
Adj. SP/Unit	\$55,750	\$256,141			

Sample comparable sales report.

Page: 3

Microsoft Access

File Edit View Insert Format Records Tools Window Help

Tahoma 8 B I U

COM_BOE : Form

Subject Property Sales Comp Sales

Sale Parcel

Buyer LAKEWOOD INVESTORS LLC Seller MAO SARY & LEEANNA
Parcel Number 11821320100 Situs Address 1617 SE JUDD ST LACEY

Property Data

Prop Type APT Acres Sold 2.15 Zoning MD REMOVE COMP2
Region 23 Total SqFt 93654 County

Sale Data

SP/SqFt 52.03
SP/Unit 39,900
Sale Date 07/30/2004
Sale Price \$1,596,000
Excise 327507

Recommended

Lnd Value \$1,420,650
Bldg Value \$8,494,200

Adjustments

Assessment Date 01/01/2007
Time .009
Qual x SF 117.89
Eff Age x SF -2.25
Cond x SF 0
Garage 0
Carport 0
CvrdPkg 0

Structure Data

Structure Type	Total SqFt	# Units	Year Built	Construction	Quality	Condition	Total RCNLD
Com APARTMENTS/STORAGE-WHSE	30,672	40	1974 - 1974	D	A	AV	1163881
Res							
Attached Carport							
Detached Carport							
Attached Garage							
Detached Garage							
Paving	46,472						92,415
Mobile Home Spaces							
RV Trailer Park Spaces							
Golf Course							
Other Detached Structure Value	1						16,061

Notes

Record: 1 of 2

Select "Cost Approach".

BOE Response Cover
Market Approach
Cost Approach
Refresh Comps

Form View NUM

13. Close the market approach, click on "Cost Approach" to view a summary of the cost report.

Microsoft Access - [Cost Approach : Report]

File Edit View Tools Window Help

Type a question for help

Fit Close Setup

Sample Cost Summary.

HOLLAND HOLDINGS IV CAPITAL CITY
38750100100

COST APPROACH

LAND

LAND SIZE 8.830 ACRES

INFLUENCES AFFECTING VALUE
NONE

LAND VALUE	SF @ \$ =	\$1,420,650
------------	-----------	-------------

IMPROVEMENTS

APARTMENTS	95,852 SF @ \$79.14 =	\$7,586,400
CLUB-HOUSE	1,963 SF @ \$93.63 =	\$183,800
DETACHED STRUCTURE VALUE		\$725,000
TOTAL IMPROVEMENT VALUE		\$8,494,200

SUMMARY

TOTAL VALUE		\$9,914,850
-------------	--	-------------

RS-1

Page: 1

Ready

Microsoft Access - [COM_BOE : Form]

File Edit View Insert Format Records Tools Window Help

Tahoma 8 B I U

Subject Property Sales Comp Sales

Sale Parcel

Buyer LAKEWOOD INVESTORS LLC Seller MAD SARY & LEEANNA
Parcel Number 11821320100 Situs Address 1617 SE JUDD ST LACEY

Property Data

Prop Type APT Acres Sold 2.15 Zoning MD REMOVE COMP2
Region 23 Total SqFt 93654 County

Sale Data

SP/SqFt 52.03
SP/Unit 39,900
Sale Date 07/30/2004
Sale Price \$1,596,000
Excise 327507

Recommended

Ln'd Value \$1,420,650
Bldg Value \$8,494,200

Adjustments

Assessment Date 01/01/2007
Time .009
Qual x SF 117.89
Eff Age x SF -2.25
Cond x SF 0
Garage 0
Carport 0
CvrdPkg 0

Structure Data

Structure Type	Total SqFt	# Units	Year Built	Construction	Quality	Condition	Total RCNLD
Com APARTMENTS/STORAGE-WHSE	30,672	40	1974 - 1974	D	A	AV	1163881
Res							
Attached Carport							
Detached Carport							
Attached Garage							
Detached Garage							
Paving	46,472						92,415
Mobile Home Spaces							
RV Trailer Park Spaces							
Golf Course							
Other Detached Structure Value		1					16,061

Notes

Record: 1 of 2

BOE Response Cover
Market Approach
Cost Approach
Refresh Comps

Select "BOE Response Cover".

Form View NUM

14. Close the cost report, click on "BOE Response Cover".
15. Close the cover sheet. If you are satisfied with the answer, click on "Print Answer."
16. Archive the answer for future reference.

APPENDIX

Apartment Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrndSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Detached Structure Adjustment

$$\text{DetAdj} = \text{Subj TotalDetValue} - \text{Sale TotalDetValue}$$

Multifamily Sales Adjustments

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrndSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment (from residence record)

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Condition Times SF Adjustment (from residence record)

$$\text{CondWgt} = \text{IF}(\text{Condition} = "VP", 0.5, \text{IF}(\text{Condition} = "PR", 0.67, \text{IF}(\text{Condition} = "FR", 0.83, \text{IF}(\text{Condition} = "AV", 1, \text{IF}(\text{Condition} = "GD", 1.17, \text{IF}(\text{Condition} = "VG", 1.33, \text{IF}(\text{Condition} = "EX", 1.5))))))$$

$$\text{Subj CondSF} = \text{Subj TotalSF} \times \text{CondWgt}$$

$$\text{Sale CondSF} = \text{Sale TotalSF} \times \text{CondWgt}$$

$$\text{CondSFAdj} = \text{Coef} \times (\text{Subj CondSF} - \text{Sale CondSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Garage Adjustment (per SQFT)

$$\text{Subj GarSF} = \text{Subj ATT_GAR_SQFT} + \text{Subj DS_GAR_SQFT}$$

$$\text{Sale GarSF} = \text{Sale ATT_GAR_SQFT} + \text{Sale DS_GAR_SQFT}$$

$$\text{GarageAdj} = \text{Coef} \times (\text{Subj GarSF} - \text{Sale GarSF})$$

Carport Adjustment (per SQFT)

$$\text{Subj CprtSF} = \text{Subj ATT_CRT_SQFT} + \text{Subj DS_CRT_SQFT}$$

$$\text{Sale CprtSF} = \text{Sale ATT_CRT_SQFT} + \text{Sale DS_CRT_SQFT}$$

$$\text{CarportAdj} = \text{Coef X} (\text{Subj CprtSF} - \text{Sale CprtSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj MktLand} - \text{Sale MktLand}$$

Other Detached Structure Adjustment (excluding garages and carports)

$$\text{Subj OthrValue} = \text{Subj TotalDetValue} - \text{Subj DET_CRT_VAL} - \text{Subj DET_GAR_VAL}$$

$$\text{Sale OthrValue} = \text{Sale TotalDetValue} - \text{Sale DET_CRT_VAL} - \text{Sale DET_GAR_VAL}$$

$$\text{OthrDetAdj} = \text{Subj OthrValue} - \text{Sale OthrValue}$$

Fourplex Sales Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrendedSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Covered Parking Adjustment (per covered parking space)

$$\text{Subj CvrnPkgSp} = (\text{Subj ATT_CRT_SF} + \text{Subj DS_CRT_SQFT} + \text{Subj ATT_GAR_SF} + \text{Subj DS_GAR_SQFT}) / 240$$

$$\text{Sale CvrnPkgSp} = (\text{Sale ATT_CRT_SF} + \text{Sale DS_CRT_SQFT} + \text{Sale ATT_GAR_SF} + \text{Sale DS_GAR_SQFT}) / 240$$

$$\text{CvrnPkgAdj} = \text{Coef} \times (\text{Subj CvrnPkgSp} - \text{Sale CvrnPkgSp})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Other Detached Structure Adjustment (excluding garages and carports)

$$\text{Subj OthrValue} = \text{Subj TotalDetValue} - \text{Subj DET_CRT_VAL} - \text{Subj DET_GAR_VAL}$$

$$\text{Sale OthrValue} = \text{Sale TotalDetValue} - \text{Sale DET_CRT_VAL} - \text{Sale DET_GAR_VAL}$$

$$\text{OthrDetAdj} = \text{Subj OthrValue} - \text{Sale OthrValue}$$

Office Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrendedSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Medical Office Adjustment – No adjustment is necessary if the subject and comps are all the same office type.

$$\text{Med_Off} = 1 \text{ (yes) or } 0 \text{ (no)}$$

$$\text{Subj MedOffSF} = \text{Subj Med_Off} \times \text{Subj TotalSF}$$

$$\text{Sale MedOffSF} = \text{Sale Med_Off} \times \text{Sale TotalSF}$$

$$\text{MedOffAdj} = \text{Coef} \times (\text{Subj MedOffSF} - \text{Sale MedOffSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Detached Structure Adjustment

$$\text{DetAdj} = \text{Subj TotalDetValue} - \text{Sale TotalDetValue}$$

Retail Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrendedSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Convenience/Gas Adjustment – No adjustment is necessary if the subject and comps are all the same retail type.

$$\text{Conv_Gas} = 1 \text{ (yes) or } 0 \text{ (no)}$$

$$\text{Subj ConvGasSF} = \text{Subj Conv_Gas} \times \text{SubjTotalSF}$$

$$\text{Sale ConvGasSF} = \text{Sale Conv_Gas} \times \text{SaleTotalSF}$$

$$\text{ConvGasAdj} = \text{Coef} \times (\text{Subj ConvGasSF} - \text{Sale ConvGasSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Detached Structure Adjustment

$$\text{DetAdj} = \text{Subj TotalDetValue} - \text{Sale TotalDetValue}$$

Service Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrendedSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Detached Structure Adjustment

$$\text{DetAdj} = \text{Subj TotalDetValue} - \text{Sale TotalDetValue}$$

Industrial/Warehouse Adjustment Calculations

Time Adjustment

$$\text{MosBack} = (\text{AssessYear} - \text{SaleYear}) \times 12 + (\text{AssessMo} - \text{SaleMo}) - 1$$

$$\text{TimeTrnd} = \text{SP} \times \text{Coef.} \times \text{MosBack}$$

$$\text{TrndSP} = \text{SP} \times \text{TimeTrnd}$$

Grade Times SF Adjustment

$$\text{GrdWgt} = \text{IF}(\text{Quality} = "L", 0.7, \text{IF}(\text{Quality} = "F", 0.85, \text{IF}(\text{Quality} = "A", 1, \text{IF}(\text{Quality} = "G", 1.15, \text{IF}(\text{Quality} = "V", 1.3, \text{IF}(\text{Quality} = "E", 1.4))))))$$

$$\text{Subj GrdSF} = \text{Subj TotalSF} \times \text{GrdWgt}$$

$$\text{Sale GrdSF} = \text{Sale TotalSF} \times \text{GrdWgt}$$

$$\text{GrdSFAdj} = \text{Coef} \times (\text{Subj GrdSF} - \text{Sale GrdSF})$$

Eff. Age Times SF Adjustment

$$\text{Subj EffAgeSF} = \text{Subj TotalSF} \times \text{Subj EffAge}$$

$$\text{Sale EffAgeSF} = \text{Sale TotalSF} \times \text{Sale EffAge}$$

$$\text{EffAgeSFAdj} = \text{Coef} \times (\text{Subj EffAgeSF} - \text{Sale EffAgeSF})$$

Land Adjustment

$$\text{LandAdj} = \text{Subj Mktland} - \text{Sale Mktland}$$

Detached Structure Adjustment

$$\text{DetAdj} = \text{Subj TotalDetValue} - \text{Sale TotalDetValue}$$

SPSS Syntax for Trending Sale Prices

- * The same database of sales should be used in developing the neighborhood trends for the cost approach as well as the coefficients for the comparable sales model.
- * Both the neighborhood trends and sales coefficients use the same trended sale price to start the analysis.
- * Use 3 years of sales 1/1/05 to 3/31/08, create pid for sales.
- * Recost sales pid with updated cost settings.
- * Run Queries located in K:\Appraisal\Mass Appraisal\2008 Reval\Commercial Statistical\ Com Sales Approach.
* ComProject.mdb.
- * Change query criteria in _Base, Ascend_Val, and ComTrends.
* use tax year 2008, sale verify AA, LO, SI, CC.
- * Run Query Z_Sales.
- *
- * Import Sales file into SPSS.

***** Clean Sales *****.

- * Remove duplicate excise numbers.
- * Check to make sure the sales match inventory if coded "AA".
- * If the sales don't match the inventory, consider changing the sale to match the inventory.
- * Or, as an alternative, consider pulling sales from the inventory file to analyze the ratios.
- * Update current values from Ascend for multiparcel sales.
- * Check curval = 0 sales.
- * Check sigma land values to make sure correct, land value method could have been changed.
- * Sales with % complete on inventory should not be used.
- * Remove sales that are in the PI areas (outside statistical update areas).
- * Remove any sales after 3/31/2008.
- * Fill in missing land and building factors from last year.
- * Fill in missing zone.

- * To analyze Mobile home park neighborhoods from hotel/motels, to change property type from LDG to PRK.

USE ALL.

COMPUTE filter_\$=(SUBSTR(nbhd,4,1) = "M" & prop_type = "LDG").

VARIABLE LABEL filter_\$ 'SUBSTR(nbhd,4,1) = "M" & prop_type = "LDG" (FILTER)'.
VALUE LABELS filter_\$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_\$ (f1.0).
FILTER BY filter_\$.
EXECUTE .
sort cases by filter_\$ (d) .

USE ALL.

SPLIT FILE OFF.

FREQUENCIES

VARIABLES=year_of_sale region prop_type

/ORDER= ANALYSIS .

SORT CASES BY prop_type .

SPLIT FILE

LAYERED BY prop_type .

FREQUENCIES

VARIABLES=year_of_sale

/ORDER= ANALYSIS .

SPLIT FILE OFF.

COMPUTE outlier = 0.

COMPUTE newconst = 0.

COMPUTE oldratio = MKTTL/ sale_price.

```

COMPUTE spratio = sale_price / MKTTL.
COMPUTE saleyear = year_of_sale.
COMPUTE salemo = month_of_sale.
*monsfrwd variable measured forward from 1/1/05 (base date) to 3/31/08 (appraisal date).
COMPUTE mosfrwd = (saleyear - 2004) * 12 + (salem - 12).
COMPUTE mosback = (36 - mosfrwd).
EXECUTE.
*      Look at old ratios and review anything that appears out of line.
*      Identify sales with NC where current or sigma values greatly exceed sale prices.
*      If NC sales are used in analysis, adjust current and sigma values accordingly.
*      Review LND sales with improvement values.
*      Review sales with no improvements coded other than LND.

```

```

****Outlier 1 for segs etc****.
*Look at high oldratio, if parcel had new construction after sale, put 1 in newconst column.

```

```

USE ALL.
COMPUTE filter_$=(outlier = 0 ).
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

```

```

SORT CASES BY prop_type .
SPLIT FILE
  LAYERED BY prop_type .
GRAPH
  /SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
  /MISSING=LISTWISE .
SPLIT FILE OFF.

```

```

**** Sale Trend by Property Type ****.
*      For trending sale prices, it is important to exclude any sale that had a characteristics change anytime
after the sale.
*      Leaving them in would skew the SP/AV ratio used in developing the monthly trend.

```

```

*****APARTMENTS*****.

```

```

USE ALL.
COMPUTE filter_$=(outlier = 0 and prop_type = "APT").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

```

```

GRAPH
  /SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
  /MISSING=LISTWISE .

```

```

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT spratio
  /METHOD=ENTER mosfrwd .

```

*APT trend = .0095/.9877 = .0096 (use .0090 or 0.9% per month).

```
DO IF (prop_type = "APT").  
  COMPUTE mo_trnd = .0090.  
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).  
  COMPUTE trndSP = timetrnd * sale_price.
```

```
END IF.  
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.  
EXECUTE.
```

```
GRAPH  
  /SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)  
  /MISSING=LISTWISE .
```

*****MULTI-FAMILY*****.

```
USE ALL.  
COMPUTE filter_$=(outlier = 0 and prop_type = "MUL").  
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.  
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.  
FORMAT filter_$ (f1.0).  
FILTER BY filter_$.  
EXECUTE .
```

```
GRAPH  
  /SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)  
  /MISSING=LISTWISE .
```

```
REGRESSION  
  /MISSING LISTWISE  
  /STATISTICS COEFF OUTS R ANOVA  
  /CRITERIA=PIN(.05) POUT(.10)  
  /NOORIGIN  
  /DEPENDENT spratio  
  /METHOD=ENTER mosfrwd .
```

*MUL trend = .0051/1.010 = .0050 (use .005 or 0.5% per month).

```
DO IF (prop_type = "MUL" or prop_type = "RES" or prop_type = "MOB" or prop_type = "OYL" or prop_type =  
"AGR").  
  COMPUTE mo_trnd = .005.  
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).  
  COMPUTE trndSP = timetrnd * sale_price.
```

```
END IF.  
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.  
EXECUTE.
```

```
GRAPH  
  /SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)  
  /MISSING=LISTWISE .
```

*****LAND*****.

```
USE ALL.  
COMPUTE filter_$=(outlier = 0 and prop_type = "LND").  
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.  
EXECUTE .
```

```
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .
```

*LND trend = $.0103/.9549 = .0108$ (use .01 or 1.0% per month).

```
DO IF (prop_type = "LND" or prop_type = "TRN").
  COMPUTE mo_trnd = .01.
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).
  COMPUTE trndSP = timetrnd * sale_price.
```

```
END IF.
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.
```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

```
*****OFFICE*****.
```

```
USE ALL.
COMPUTE filter_$(outlier = 0 and prop_type = "OFF").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .
```

*OFF trend = $.0115/.9202 = .0125$ (use .012 or 1.2% per month).

```
DO IF (prop_type = "OFF" or prop_type = "XMP").
  COMPUTE mo_trnd = .012.
```

```

        COMPUTE timetrnd = 1 + (mosback * mo_trnd).
        COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

*****RETAIL*****
USE ALL.
COMPUTE filter_$=(outlier = 0 and prop_type = "RTL").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .

*RTL trend = .0083/1.011 = .0082 (use .008 or 0.8% per month).

DO IF (prop_type = "RTL").
    COMPUTE mo_trnd = .008.
    COMPUTE timetrnd = 1 + (mosback * mo_trnd).
    COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

*****RESTAURANT*****
USE ALL.
COMPUTE filter_$=(outlier = 0 and prop_type = "RST").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .
```

*RST trend = $.0036/1.0019 = .0036$ (use .004 or 0.4% per month).

```
DO IF (prop_type = "RST").
  COMPUTE mo_trnd = .004.
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).
  COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.
```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

*****SERVICE*****.

```
USE ALL.
COMPUTE filter_$=(outlier = 0 and prop_type = "SRV").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
```

```
GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .
```

```
REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .
```

*SRV trend = $.0127/.9228 = .013$ (use .013 or 1.3% per month).

```
DO IF (prop_type = "SRV").
  COMPUTE mo_trnd = .013.
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).
  COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.  
EXECUTE.
```

```
GRAPH  
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)  
/MISSING=LISTWISE .
```

```
*****WAREHOUSE*****.
```

```
USE ALL.  
COMPUTE filter_$=(outlier = 0 and prop_type = "WHS").  
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.  
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.  
FORMAT filter_$ (f1.0).  
FILTER BY filter_$.  
EXECUTE .
```

```
GRAPH  
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)  
/MISSING=LISTWISE .
```

```
REGRESSION  
/MISSING LISTWISE  
/STATISTICS COEFF OUTS R ANOVA  
/CRITERIA=PIN(.05) POUT(.10)  
/NOORIGIN  
/DEPENDENT spratio  
/METHOD=ENTER mosfrwd .
```

*WHS trend = $.0122/.8958 = .0136$ (use .013 or 1.3% per month).

```
DO IF (prop_type = "WHS").  
    COMPUTE mo_trnd = .013.  
    COMPUTE timetrnd = 1 + (mosback * mo_trnd).  
    COMPUTE trndSP = timetrnd * sale_price.  
END IF.  
EXECUTE.
```

```
COMPUTE trndspratio = trndSP / MKTTL.  
EXECUTE.
```

```
GRAPH  
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)  
/MISSING=LISTWISE .
```

```
*****INDUSTRIAL*****.
```

```
USE ALL.  
COMPUTE filter_$=(outlier = 0 and prop_type = "IND").  
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.  
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.  
FORMAT filter_$ (f1.0).  
FILTER BY filter_$.  
EXECUTE .
```

```
GRAPH  
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)  
/MISSING=LISTWISE .
```

```
REGRESSION
```

```

/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .

```

*IND trend = $.0128/.8292 = .0154$ (use .015 or 1.5% per month).

```

DO IF (prop_type = "IND").
  COMPUTE mo_trnd = .015.
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).
  COMPUTE trndSP = timetrnd * sale_price.

```

```

END IF.
EXECUTE.

```

```

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

```

```

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

```

*****LOGGING*****

```

USE ALL.
COMPUTE filter_$=(outlier = 0 and prop_type = "LDG").
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

```

```

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

```

```

REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .

```

*LDG trend = $.0166/.7356 = .0231$ (use .019 or 1.9% per month).

```

DO IF (prop_type = "LDG").
  COMPUTE mo_trnd = .019.
  COMPUTE timetrnd = 1 + (mosback * mo_trnd).
  COMPUTE trndSP = timetrnd * sale_price.

```

```

END IF.
EXECUTE.

```

```

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

```

```

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)

```

/MISSING=LISTWISE .

*****MOBILE AND RV PARKS*****

USE ALL.
COMPUTE filter_\$=(outlier = 0 and prop_type = "PRK").
VARIABLE LABEL filter_\$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_\$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_\$ (f1.0).
FILTER BY filter_\$.
EXECUTE .

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio
/METHOD=ENTER mosfrwd .

*PRK trend = .0053/1.0005 = .0053 (use .005 or .5% per month).

DO IF (prop_type = "PRK").
 COMPUTE mo_trnd = .005.
 COMPUTE timetrnd = 1 + (mosback * mo_trnd).
 COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

*****RECREATIONAL*****

USE ALL.
COMPUTE filter_\$=(outlier = 0 and prop_type = "REC").
VARIABLE LABEL filter_\$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_\$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_\$ (f1.0).
FILTER BY filter_\$.
EXECUTE .

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH spratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

REGRESSION
/MISSING LISTWISE
/STATISTICS COEFF OUTS R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT spratio

```

/METHOD=ENTER mosfrwd .

*REC trend = .0089/.9376 = .0094 (use .009 or 0.9% per month).

DO IF (prop_type = "REC").
    COMPUTE mo_trnd = .009.
    COMPUTE timetrnd = 1 + (mosback * mo_trnd).
    COMPUTE trndSP = timetrnd * sale_price.
END IF.
EXECUTE.

COMPUTE trndspratio = trndSP / MKTTL.
EXECUTE.

GRAPH
/SCATTERPLOT(BIVAR)=mosfrwd WITH trndspratio BY parcel_id (IDENTIFY)
/MISSING=LISTWISE .

*****SUMMARIZE SALE TRENDS BY PROPERTY TYPE*****.
USE ALL.
COMPUTE filter_$=(outlier = 0 ).
VARIABLE LABEL filter_$ 'outlier = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .

SUMMARIZE
/TABLES=mo_trnd BY prop_type
/FORMAT=NOLIST TOTAL
/TITLE='Case Summaries'
/MISSING=VARIABLE
/CELLS=COUNT MEAN .

COMPUTE yr_trnd = mo_trnd * 12.
EXECUTE.

```